Construction of Green Supply Chain Collaborative Management Mechanism for Concrete Admixture Enterprises Based on ESG Concept

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Abstract: Based on the global "dual carbon" strategy background, this article introduces the ESG (Environmental, Social, and Governance) concept to address the problems of lagging environmental performance, insufficient social responsibility fulfillment, and loose governance structure in the supply chain management of traditional concrete admixture enterprises. Through literature research and case analysis, a green supply chain collaborative management mechanism based on ESG concept has been constructed. A collaborative model covering environmental indicator quantification, social responsibility sharing, and governance structure optimization has been proposed, and corresponding implementation paths and safeguard measures have been designed. Research has shown that this mechanism can effectively enhance the sustainable development capability of enterprises and achieve a win-win situation between economic and social benefits.
***Keywords*:** ESG concept, green supply chain, collaborative management, concrete admixtures, sustainable development

1. Introduction

Under global climate change, the construction industry accounts for nearly 40% of carbon emissions, and the use of concrete production has outstanding carbon emissions. The contribution of additives should not be underestimated. The 14th Five Year Plan clarifies the "dual carbon" target, tightens supervision of the building materials industry, and requires full chain transformation of green supply chain policies. However, additive companies have many ESG shortcomings, and existing research lacks exploration of a full chain collaborative management mechanism. This article aims to establish relevant mechanisms to provide guidance for enterprises to enhance their sustainable development capabilities[1].

2. ESG Status Quo&Diagnosis of Concrete Additive Enterprises

2.1 Current Status of ESG Development in the Industry

Currently, the concrete admixture industry is facing a complex policy and regulatory environment. The national and local governments have issued a series of strict environmental emission standards for the building materials industry, which have made clear regulations on the pollutant emissions, energy consumption, and other aspects of enterprises. At the same time, companies are required to disclose ESG information to promote the green and sustainable development of the industry. In terms of market competition, domestic and foreign leading additive companies have released ESG reports to showcase their practices and achievements in environmental, social, and governance aspects. By comparing and analyzing these reports, it can be found that the industry as a whole has made certain progress in energy conservation, emission reduction, green procurement, etc., but the average level still needs to be improved. Although some companies have begun to attach importance to ESG management, there are still many shortcomings in the specific implementation process, and they have not fully utilized the promoting role of ESG in corporate development.

2.2 Problem attribution analysis

From a conscious perspective, the senior management of enterprises has a low level of integration into ESG concepts, only keeping them at the slogan stage and not truly incorporating them into the core strategy of the enterprise, resulting in insufficient consideration of ESG factors in resource allocation and decision-making processes. At the institutional level, there is a lack of effective incentive mechanisms, and the enthusiasm of suppliers and customers to participate in green transformation is not high, making it difficult to form a good situation of collaborative development. At the execution level[2], there is a lack of unified ESG evaluation standards within the enterprise, making it difficult to connect with external international standards, resulting in a lack of clear guidance and norms in the ESG management process, which affects the effectiveness and quality of ESG practices.

3. Construction of Collaborative Management Mechanism for Green Supply Chain Based on ESG Concept

3.1 Overall framework and objectives for mechanism construction

The construction of a green supply chain collaborative management mechanism based on ESG principles needs to be centered around achieving environmental friendliness, social harmony, and efficient governance. The overall framework covers four levels: strategic collaboration, operational collaboration, information collaboration, and benefit collaboration. Strategic synergy requires upstream and downstream enterprises in the supply chain to deeply integrate ESG concepts into their corporate strategies, forming a common development vision and goals; Operation collaboration focuses on the green and collaborative operation of production, procurement, logistics and other links; Information collaboration emphasizes the establishment of an efficient information sharing platform to achieve real-time transmission and transparency of ESG data; Interest synergy stimulates the enthusiasm and initiative of all parties involved through a reasonable mechanism for distributing benefits, and jointly promotes the development of green supply chains. Through the construction of this framework, the aim is to enhance the overall competitiveness of the green supply chain of concrete admixture enterprises, and achieve a win-win situation of economic benefits, environmental benefits, and social benefits.

3.2 Design of Strategic Coordination Mechanism

Strategic synergy is the foundation of collaborative management in green supply chains. Concrete admixture enterprises should jointly develop ESG strategic plans with suppliers, customers, and other partners, clarifying the goals and tasks of each stage. For example, companies can sign long-term green procurement agreements with suppliers, agreeing to prioritize environmentally friendly products in raw material procurement and jointly carry out technological research and development to enhance the green performance of raw materials. On the customer side, companies can provide green product solutions to assist customers in reducing carbon emissions and achieving common sustainable development. At the same time, establish an evaluation and feedback mechanism for strategic collaboration, regularly assess the implementation of the strategy, adjust the strategic direction in a timely manner based on the evaluation results, and ensure the effectiveness and adaptability of strategic collaboration.

4. Implementation path and guarantee measures of collaborative management mechanism

4.1 Phased Implementation Path

The implementation of collaborative management mechanism needs to be gradual and orderly. In the short term, concrete admixture companies need to conduct a comprehensive ESG assessment to identify their strengths and weaknesses in environmental, social, and governance aspects. Based on this, they can develop detailed short-term action plans, such as optimizing production processes to reduce energy consumption and strengthening employee safety training. In the mid-term stage, we will focus on building a supply chain collaboration platform, establish close connections with upstream and downstream enterprises, achieve information sharing and resource integration, and jointly carry out green technology research and application, such as developing more environmentally friendly additive formulas. In the long run, continuously improving the collaborative management mechanism, forming a normalized operation mode, promoting the deep transformation of the entire supply chain towards green, low-carbon, and sustainable development, and establishing a green benchmark image for enterprises in the industry.

4.2 Strengthen organizational and talent support

Enterprises should establish a dedicated ESG and green supply chain collaborative management team, clarify the responsibilities of each department, and ensure the effective implementation of collaborative management work. At the same time, strengthening talent cultivation and introduction, on the one hand, providing training on ESG concepts and green supply chain management knowledge to existing employees to enhance their professional competence; On the other hand, attracting talents with relevant professional backgrounds and rich experience to join injects new vitality into the enterprise.

4.3 Improve supervision and incentive mechanisms

Establish an internal supervision system, regularly inspect and evaluate the operation of the collaborative management mechanism, promptly identify problems and make corrections. Establish external supervision channels to accept supervision from the government, the general public, and others. In addition, a reasonable incentive mechanism should be established to

reward departments and individuals who have demonstrated outstanding performance in collaborative management work, stimulate employees' enthusiasm and creativity, and ensure the smooth implementation of the collaborative management mechanism.

5. Conclusion and Prospect

This study explores in depth the collaborative management mechanism of green supply chain for concrete admixture enterprises based on ESG concepts. Through current situation analysis, mechanism construction, and implementation path planning, the key role of collaborative management in enhancing the sustainable development capability of enterprises has been clarified. The research results indicate that this mechanism can effectively integrate supply chain resources, reduce environmental impact, enhance social responsibility, and optimize governance structure. However, in practice, there are still challenges such as difficulty in collaboration and inconsistent standards. In the future, with increasing policy support and continuous technological innovation, the collaborative management of green supply chains will continue to improve. Enterprises should keep up with the trend, actively practice, and promote the industry to move towards green, low-carbon, and sustainable directions, achieving a win-win situation for economic and environmental benefits.

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